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EXTERNAL ESOPHAGOTOMY FOR IMPACTED  
FOREIGN BODY

*TWO RECENT CASES, WITH RECOVERY IN EACH*

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## EXTERNAL ESOPHAGOTOMY FOR IMPACTED FOREIGN BODY.

TWO RECENT CASES WITH RECOVERY IN EACH.

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CASE I. On March 16, 1897, Mr. F., a man of fifty years, while eating his midday meal swallowed a large bolus of mutton, which stuck in his throat. The lodgment of this occasioned considerable pain and effort at regurgitation; immediately afterward he was unable to swallow either solids or liquids. He had removed both upper and lower plates of false teeth before going to the table, and so had been unable to properly masticate.

Shortly after the accident he was seen by Dr. L. M. Walker, who kindly brought him to me an hour later. The patient did not know whether there was bone in the piece of meat swallowed; he complained of pain and of "feeling something" in the throat just below the larynx.

On examination deep pressure behind the cricoid cartilage elicited a little pain; the patient was able to swallow water by taking considerable time and making a good bit of effort. Successive sizes of esophageal bougies were introduced, beginning with one of large calibre; all of these were arrested seven and one-half inches from the dental arcade; unsuccessful attempts were made to grasp the foreign body with an alligator

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forceps. The patient was advised to attempt to swallow what milk he could.

On the following day, March 17th, he was examined, both morning and afternoon, with the same result as on the preceding day, no instrument passing beyond seven and one-half inches. He could swallow liquids very slowly; a teaspoonful of milk seemed to pass the obstruction after two or three gulps. Attempts at instrumentation provoked much coughing and considerable flow of mucus. He was advised to endeavor to take three pints of milk and six ounces of freshly expressed beef-juice in twenty-four hours, and to move the bowels by rectal enemata.

Examinations were made on March 18th and 19th; the bougies seemed to strike on a solid substance, but no grating could be detected. The patient was taking the amount of food indicated, and the pulse and temperature did not go above the normal. On the afternoon of March 19th operation for the following day was advised, on the ground that a bolus of meat should have been disintegrated after this length of time. The patient was confined to bed and rectal nutrition was ordered.

External esophagotomy at St. Luke's Hospital on March 20, 1897, at 2 P. M. An esophageal bougie was passed just before operation, and again after the patient was under the influence of chloroform. With the chest well elevated and the head extended and drawn to the right side, a four-inch incision was made at the inner border of the sterno-mastoid muscle. This muscle was drawn to the outer side, the sternothyroid to the inner side; the internal jugular vein and carotid artery were recognized and retracted to the outer side, the descendens noni nerve and trachea being well drawn to the right side; the recurrent laryngeal nerve was recognized and protected. Pal-



pation at the bottom of the wound and against the spinal column detected a sharp-pointed object, which was apparently in the esophagus and midway between the cricoid cartilage and the head of the sternum. On isolating the trachea and larynx and drawing them well to the opposite side, it seemed more than probable that this was a foreign body; a solid instrument of appropriate curve passed through the mouth could be felt only in the pharynx at the upper part of the

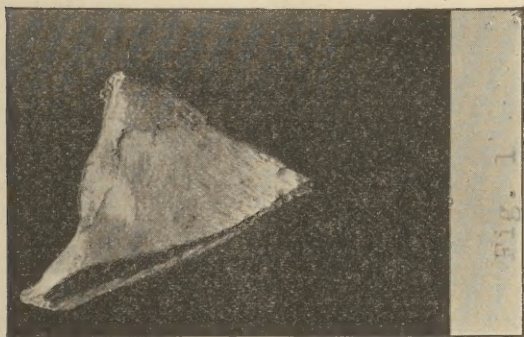


FIG. 1.

wound. An incision was therefore made on this above-mentioned object, which was found to be a sharp corner of a piece of bone; the incision in the esophagus was enlarged to three-quarters of an inch, and the piece of bone (Fig. 1) was removed. It was triangular in shape, with sharp corners, one and one-fourth inches in its greatest length, and one inch on each of the other two sides, flat, about one-eighth of an inch thick; it lay transversely across the esophagus, the wall of which at the point of incision showed be-

ginning ulceration of the mucous coat. When removed, the bone was almost entirely divested of meat. In extracting it great care was taken not to soil the wound; the wound itself was washed and the rent in the esophagus was immediately sewn with a continuous catgut suture, which passed through all of the coats except the mucous. The bottom of the wound at the site of the esophageal opening was well packed with iodoform gauze; this was brought out through the lower part of the wound and the upper half sutured; a large aseptic dressing was applied from the maxillary region to the upper part of the chest. The operation was one and one-half hours in length, and the patient was in good condition at its close. He was ordered to neither swallow nor talk; the mouth was kept moistened; he was given a six-ounce enema of peptonized milk, whiskey and the yolk of an egg every four hours, and during the first thirty-six hours a three-ounce normal salt solution was thrown into the rectum midway between the nutritives.

Aside from the extreme discomfort which attends the complete withholding of fluids by the mouth the patient had little of which to complain; the pulse did not go above 84 nor the temperature above 100°. On the fourth day the dressing was changed for the first time, and a little suppuration found along the track of the gauze drain. At the end of four days a stomach-tube was passed and nutrients administered through it; feeding by tube was repeated every six hours. The stitches were removed from the upper part of the wound on the seventh day, the lower part suppurating. On the tenth day the patient was allowed to swallow some milk, a little of which came out through the wound in the neck, showing that the rent in the esophagus had not entirely healed. The neck wound was dressed twice daily, carefully

cleansed well to its bottom and packed with iodoform gauze; it gradually contracted. On about the twentieth day, fluid swallowed did not appear in the wound, and shortly thereafter the wound itself was entirely closed.

During the first ten days after the operation the patient, who had hitherto been a robust and muscular man, emaciated markedly; but as soon as stomach feeding became adequate he quickly regained his former weight. He has had no difficulty in deglutition since discharge.

CASE II. William W., age two and one-half years, while playing with a toy train of cars on March 24, 1897, cried out with pain and ran to his mother; immediately thereafter he was unable to swallow, put his hands to his throat and was evidently in much discomfort. A wheel from one of the cars was found to be missing. Shortly afterward he was examined by the family physician, Dr. H. M. Ogilbee, of Manitou. The little fellow was able to swallow fluids, but any solid food caused much pain and was regurgitated; he was therefore fed on soups, milk, oatmeal mush and the like. A few days afterward he was seen in consultation by Dr. S. E. Solly, of Colorado Springs. The child had lost a little in flesh, but remained fairly well nourished. Inability to swallow solids continued.

On April 9, 1897, sixteen days after the accident, his physician brought him to me in Denver; at this time he was apparently strong and healthy, played about as usual, and was able to swallow milk and thickened liquids with but little difficulty. On the day on which I first saw him, and with the kind assistance of Mr. C. F. Lacombe, an expert electrician, I examined the boy with the aid of the x-ray. Fluorescopic vision distinctly revealed the wheel just above and behind the

episternal notch; the rim and spokes stood out with startling distinctness. A picture was taken, the child being chloroformed and lying on its belly with the plate strapped to its chest and neck; a five-minute exposure was intended, but the tube broke at the end of three minutes; the resulting skiagraph, while imperfect, showed the presence and location of the foreign body with sufficient plainness.

On the following day, under chloroform, instrumentation of the esophagus was attempted, but failed, as all of the instruments at my disposal were too large and too stiff for a child of this age; accordingly I had other instruments, smaller and more flexible, sent to me from the East. This necessitated a delay of four days, during which time the child remained in the same good condition.

On April 14th a further attempt was made, under chloroform, to remove the foreign body through the mouth. Careful and painstaking effort was made for about thirty minutes, but with no avail; there was irritation of the pharynx and upper esophagus on hooking the finger behind the epiglottis to guide the instrument, and marked spasm of the glottis with suspended respiration ensued. It was frequently necessary to tip the child up and clear away the mucus. The only instrument which could be introduced into the esophagus was a slender alligator forceps with spiral spring, and the child stopped breathing as soon as this entered the gullet. As Dr. Stedman (who was aiding) well said, the only time which we could utilize for this instrumentation was that during which the child could hold his breath.

Removal through the neck was therefore advised and was undertaken the following day. Shortly before operation a second x-ray picture was taken, in order to ascertain whether the foreign body had



changed in position; the resulting picture showed the wheel about one-quarter of an inch lower than when the first skiagraph was taken.

External esophagotomy was performed at 12 M., on the twenty-second day after the accident. A two and one-half inch incision was made along the inner border of the sterno-mastoid muscle from the sterno-clavicular notch upward; the inner border of this muscle was exposed, the omo hyoid brought into

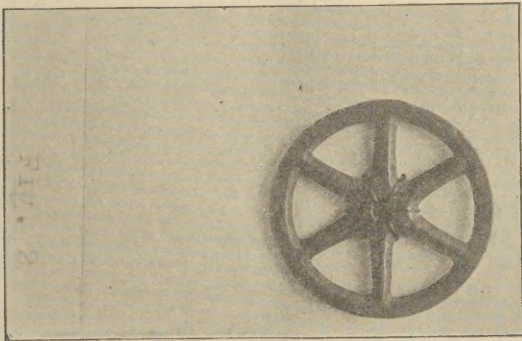


FIG. 2.

view and divided transversely; the sterno-mastoid, together with the large vessels, was retracted to the outer side, the sterno-thyroid being drawn to the opposite side; the recurrent laryngeal and descendens noni nerves were not recognized. The thyroid gland came into view, as did also the remains of the thymus gland, the latter being large in amount, covering the surface of the trachea and markedly obscuring the deep portion of the wound itself. Blunt dissection was made back to the spine, on which were seen the longi-

tudinal fibres of the esophagus; the esophagus was carefully palpated, but no foreign body could be detected. It was therefore opened, one-half inch above the head of the sternum, this incision being enlarged downward until one inch in length. The walls were held apart by silk sutures carefully introduced. About one inch below the lower angle of the wound in the esophagus the upper margin of the wheel was seen; the foreign body (Fig. 2) itself was grasped with forceps and carefully withdrawn; it was so firmly fixed that quite a bit of force was necessary in order to extract it.

There was some vomiting through the esophagus into the wound during the operation; this was promptly washed and sponged away, and the deep portion of the wound carefully protected at all times by gauze. The wound in the esophagus was tightly closed by two layers of interrupted sutures of fine black silk, the inner of these layers passing to but not through the mucous coat. The external wound was thoroughly washed and completely packed, in part with iodoform gauze and in part with plain gauze moistened in a sublimate solution, one part in ten thousand; a large external dressing was applied. The operation was one hour and fifteen minutes in length. The patient was in good condition at its close. A five-drachm rectal enema of peptonized milk containing five grains of bromide of sodium was given every four hours. Nothing was allowed by the mouth until the end of forty-five hours, at which time teaspoonful doses of boiled water were administered, followed a day later by teaspoonful doses of peptonized milk. During these first two days the child was exceedingly restless, sleeping at short intervals and constantly crying for water, but being relieved somewhat by frequent sponge baths. The pulse averaged 130 per minute, the tem-

perature ranged from  $100^{\circ}$  to  $101^{\circ}$ ; as soon as fluids could be administered by the mouth the little patient became more quiet and the pulse and temperature gradually fell. The first dressing was changed at the end of three days and the wound found to be aseptic; the rent in the esophagus could be seen at the bottom; there was no leakage. The dressing was changed under chloroform daily thereafter, packing being carried well to the bottom; this alternated between weak solutions of bichloride of mercury, carbolic acid and iodoform gauze, in order to avoid the possibility of drug poisoning. The wound gradually filled; there was at no time leakage from the esophagus, the sutures of sterile black silk were buried in the aseptic healing process, and fourteen days after the operation the little fellow was taken back to his home in Manitou. A recent letter from Dr. Ogilbee assures me that he has had no difficulty in swallowing; it is now a year since the operation. During the first few weeks after removal of the foreign body the voice was of high pitch and strident, but it has since resumed its normal tone.

But little need be said in way of comment on the class of accidents exemplified by the foregoing cases. In diagnosis we now have the invaluable assistance of the Röntgen ray; there can be no department of surgery in which this wonderful discovery finds better employment. Certainly it is to be resorted to in every instance in which we suspect the lodgment of a foreign body in the esophagus. In the first of the foregoing cases the picture was of no aid, but the skiagraph was not of the best and the nature and position of the foreign body was such as to render diagnosis even by the best possible picture exceedingly difficult. In the second case fluorescopic examination of the patient made accurate diagnosis absolutely certain; most

startling and vivid was the clear and distinct picture of the iron wheel, plainly outlined in its definite relation to the bony thorax.

Management of these foreign bodies impacted in the esophagus must rest, when possible, on extraction through the mouth or on forcing them downward into the stomach; but we are not to forget that efforts at extraction may be in themselves dangerous, as when the sharp corners of a tooth-plate or a piece of bone may be driven into and through the wall of the esophagus; we are to remember the important point laid down by Richardson, of Boston, that the coin-catcher or throat instrument employed in attempting extraction may itself become impacted and necessitate immediate operation for its removal. It is well, therefore, before attempting extraction by instrumentation to have everything in readiness for the immediate performance of external esophagotomy should this be necessary. As one recalls the longitudinal position which the wheel occupied in the little child's gullet, it seems quite possible that a coin-catcher passed below it and drawn upward might so tilt the foreign body as to impact it firmly against the spine or trachea or larynx and so render the instrument itself impossible of withdrawal. Further, we are not to forget that attempts at forcing downward a cervical foreign body may lodge it midway in the thoracic portion of the esophagus, where it would be difficult of access, either by esophagotomy or gastrotomy.

Of the operation itself but little need be said. The incision is the classic one; the various structures are plainly recognized step by step, and the important vessels and nerves carefully protected. After extraction of the foreign body the esophageal wall may be sutured, preferably by tiers of fine black silk, if the wall itself be in good condition; if it be ulcerated, the



ulcer may be excised and the wall sutured, or the wound may be left open. The subject has been carefully considered in a recent and extended study by Bull and Walker. Whatever be the management of the wound in the esophagus, the external wound should not be sutured but should be carefully packed to the bottom; this wound may extend to or into the chest, and adequate packing is the best protection against sepsis. If the wound in the esophagus be left open, a stomach tube may be introduced through it at the time of operation, if the surgeon so desires. If the wound in the esophagus be closed primarily, it will be best to withhold everything by the mouth until such time as firm union is probable; distressing thirst may be much relieved by rectal injections and by frequent bathing. Should the stitches in the esophageal wall give way, it will be necessary to pack thoroughly until the hole is closed.

The mortality of the procedure will naturally vary with the different cases. It is most important not to delay operation until malnutrition saps the patient's strength. Further, the sharp corner of a foreign body may speedily ulcerate into and through the esophageal wall. Bull and Walker found the death-rate to be 22.5 per cent. in a total of 167 collected cases, though in the 32 most recent cases the mortality was diminished to 15.6 per cent. The earlier the operation is performed and the less the integrity of the esophageal wall is impaired the better will be the prognosis.





